

WHAT IS CLAIMED IS:

1. A method for transmitting data units of a data stream,  
especially a multimedia data stream, from at least one

5 transmitting facility to at least one receiving facility  $E_j$   
( $j \geq 1$ ), in which method:

n data sets ( $n \geq 2$ ) are sent with the aid of the at least  
one transmitting facility,

10 the sending of a first data set  $M_1$  of the n data sets begins  
at a time  $t_1$ ,

the first data set  $M_1$  comprises all data units of the data  
stream,

the sending of at least one further data set  $M_k$  ( $2 \leq k \leq n$ )  
of the n data sets begins at a time  $t_k$  ( $2 \leq k \leq n$ ),

15 the at least one further data set  $M_k$  comprises at least one  
part of the data units of the data stream, and

the n data sets are sent in such a manner that in the at  
least one receiving facility  $E_j$ , a reproduction of the data units  
of the data stream as predetermined time sequence of information,  
20 especially picture and/or sound information, can be begun at a

starting time  $t_k^A = t_k + \theta$  ( $\theta > 0$ ) and ended at an ending time  $t_k^B$   
 $= t_k^A + \Delta t$ , where  $\theta$  is a period characteristic of the

transmission of individual data units of the data stream from the  
at least one transmitting facility to the at least one receiving

facility  $E_j$  and/or processing of individual data units of the data stream and  $\Delta t$  is a period characteristic of the reproduction of all data units of the data stream as the predetermined time sequence of information,

5 wherein the at least one further data set  $M_k$  ( $2 \leq k \leq n$ ) is formed from selected data units of the data stream for which an earlier transmission is begun at least once by the at least one transmitting facility in a time interval between a time  $t_{k-1}$  and the time  $t_k$  ( $2 \leq k \leq n$ ), a time interval  $(t_{k-1}-t_k)$  being smaller  
10 than  $\Delta t$  for at least two of successive times  $t_k$  and  $t_{k+1}$  ( $1 \leq k \leq n$ ).

2. The method according to claim 1, wherein an input of a user of the at least one receiving facility  $E_j$  for establishing  
15 the time  $t_1$  and/or the time  $t_k$  ( $2 \leq k \leq n$ ) is electronically detected, the input being transmitted to the at least one transmitting facility via a return data channel formed between the at least one transmitting facility and the at least one receiving facility  $E_m$ .

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3. The method according to claim 1, wherein the time  $t_1$  and/or the times  $t_k$  ( $2 \leq k \leq n$ ) are predetermined at the transmitting end.

4. The method according to claim 1, wherein an essentially equal time interval is formed in each case between the times  $t_{k-1}$  and  $t_k$  ( $2 \leq k \leq n$ ).

5 5. The method according to claim 1, wherein the data stream comprises  $x$  data units  $D_x$  ( $x = 1, 2, \dots$ ), the transmitting between the at least one transmitting facility and the at least one receiving facility  $E_j$  ( $j \geq 1$ ) is performed over a predetermined period which is divided into time intervals  $\Delta t_y$  ( $y = 1, 2, \dots$ ), an  
10  $m$ th data unit  $D_m$  ( $1 \leq m \leq x$ ) being transmitted within each  $m$ th time interval  $\Delta t_m$ .

6. The method according to claim 1, wherein the data stream comprises  $x$  data units  $D_x$  ( $x = 1, 2, \dots$ ), the transmitting between  
15 the at least one transmitting facility and the at least one receiving facility  $E_j$  ( $j \geq 1$ ) is performed over a predetermined period which is divided into time intervals  $\Delta t_y$  ( $y = 1, 2, \dots$ ), the sending of an  $m$ th data unit  $D_m$  ( $1 \leq m \leq x$ ) being begun within each  $(1 + p \cdot m)$ -th time interval  $\Delta t_{1+pm}$  ( $p \geq 0$ ) and extending over  
20  $m$  time intervals  $\Delta t_{1+pm} + \dots + \Delta t_{m+pm}$ .

7. The method according to claim 1, wherein the datastream comprises  $x$  data units  $D_x$  ( $x = 1, 2, \dots$ ), the transmitting between the at least one transmitting facility and the at least one

receiving facility  $E_j$  ( $j \geq 1$ ) is performed over a predetermined period which is divided into time intervals  $\Delta t_y$  ( $y = 1, 2, \dots$ ), all  $m$ th data units  $D_m$  ( $1 \leq m \leq x$ ) being sent in each  $m$ th time interval  $\Delta t_m$  when  $m = 2^p$  ( $p = 0, 1, 2, 3, \dots$ ) and all  $h$ th data units  $D_h$  ( $1 < h \leq x$ ), for which  $2^k < h < 2^{z+1}$  ( $z \geq 0$ ), exactly once between the  $2^z$ th time interval and the  $2^{z+1}$ th time interval.

8. The method according to claim 5, wherein the data units  $D_x$  of the data stream of a total data stream are comprised of data units  $D_{x^*}$  ( $x^* = v + x$ ;  $v \geq 1$ ), where  $v$  is a number of data units  $D_{x^*}$  of the total data stream which are conveyed to the at least one receiving facility  $E_j$  before the time  $t_1$  so that the following holds true when the  $m$ th data unit  $D_m$  is sent:

$$v < m \leq x^*.$$

9. The method according to claim 6, wherein the data units  $D_x$  of the data stream of a total data stream are comprised of data units  $D_{x^*}$  ( $x^* = v + x$ ;  $v \geq 1$ ), where  $v$  is a number of data units  $D_{x^*}$  of the total data stream which are conveyed to the at least one receiving facility  $E_j$  before the time  $t_1$  so that the following holds true when the  $m$ th data unit  $D_m$  is sent:

$$v < m \leq x^*.$$

10. The method according to claim 7, wherein the data units  $D_x$  of the data stream of a total data stream are comprised of data units  $D_{x^*}$  ( $x^* = v + x$ ;  $v \geq 1$ ), where  $v$  is a number of data units  $D_{x^*}$  of the total data stream which are conveyed to the at least one receiving facility  $E_j$  before the time  $t_1$  so that the following holds true when the  $m$ th data unit  $D_m$  is sent:

$$v < m \leq x^*.$$

11. The method according to claim 1, wherein a data unit  $D_x^E$  ( $x = 1, 2, \dots$ ) of the data stream which is received by the at least one receiving facility  $E_j$  is reproduced with the aid of replay means at a replay time  $t_x^W$  ( $x = 1, 2, \dots$ ) within the predetermined time sequence of information items, an  $m$ th data unit  $D_m$  of the data stream being sent in such a manner that an  $m$ th received data unit  $D_m^E$  ( $1 \leq m \leq x$ ) comprising the transmitted  $m$ th data unit  $D_m$  is received by the at least one receiver facility  $E_j$  closely in time to a replay time  $t_m^W$ .

12. The method according to claim 1, wherein a data unit  $D_x^E$  ( $x = 1, 2, \dots$ ) of the data stream which is received by the at least one receiving facility  $E_j$  is reproduced with the aid of replay means at a replay time  $t_x^W$  ( $x = 1, 2, \dots$ ) within a predetermined time sequence of information items, an  $m$ th received data unit  $D_m^E$  ( $1 \leq m \leq x$ ) received at a receiving time  $t^E$  being

a) transferred to the replay means when  $t_E = t_m^W - \varepsilon$  ( $\varepsilon > 0$ ),

where  $\varepsilon$  is a characteristic time for transferring the  $m$ th received data unit  $D_m^E$  to the replay means and/or a conversion of the  $m$ th received data unit  $D_m^E$  for reproduction; or

5 b) stored in storage means of the at least one receiving facility  $E_j$  if  $t_E < t_m^W - \varepsilon$  and the  $m$ th received data unit  $D_m^E$  is not yet stored in the storage means; or

c) discarded if  $t_E > t_m^W - \varepsilon$  or the  $m$ th received data unit  $D_m^E$  is already stored in the storage means.

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13. The method according to claim 1, wherein a data unit  $D_x^E$  ( $x = 1, 2, \dots$ ) of the data stream which is received by the at least one receiving facility  $E_j$  is reproduced with the aid of replay means at a replay time  $t_x^W$  ( $x = 1, 2, \dots$ ) within a

15 predetermined time sequence of information items, an  $m$ th received data unit  $D_m^E$  ( $1 \leq m \leq x$ ) received at a receiving time  $t^E$  being

a) transferred to the replay means when  $t_E = t_m^W - \varepsilon$  ( $\varepsilon > 0$ ),

where  $\varepsilon$  is a characteristic time for transferring the  $m$ th received data unit  $D_m^E$  to the replay means and/or a conversion  
20 of the  $m$ th received data unit  $D_m^E$  for reproduction; or

b) stored in storage means of the at least one receiving facility  $E_j$  if  $(t_E < (t_m^W - \varepsilon) < (t_E + \Delta t_{Mem}))$  and the  $m$ th received data unit  $D_m^E$  is not yet stored in the storage means, where  $\Delta t_{Mem}$  is a characteristic period for the reproduction of a part of the

received data units  $D_x^E$  and the storage capacity of the storage means is limited to the part of the received data units; or

- c) discarded if  $t_E > t_m^w - \varepsilon$  or the  $m$ th received data unit  $D_m^E$  is  
5 already stored in the storage means.

14. The method according to claim 1, wherein a data stream is at least partially transmitted as encrypted data stream.

- 10 15. The method according to claim 14, wherein the first data set  $M_1$  and the at least one further data set  $M_k$  ( $2 \leq k \leq n$ ) of the  $n$  data sets are transmitted in such a manner that during the reproduction of the data units in the at least one receiving facility  $E_j$ , data units which are transmitted unencrypted are  
15 reproduced for a predetermined starting period after the starting time  $t_k^A = t_k + \theta$  ( $\theta > 0$ ).

16. Transmitting device for transmitting data units of a data stream, especially a multimedia data stream, to at least one  
20 receiving facility  $E_j$  ( $j \geq 1$ ), comprising transmitting means for transmitting the data units and control means for controlling the transmitting means, in such a manner that the data units of the data stream can be transmitted from at least one transmitting

facility to at least one receiving facility  $E_j$  ( $j \geq 1$ ), in which method:

$n$  data sets ( $n \geq 2$ ) are sent with the aid of the at least one transmitting facility,

5 the sending of a first data set  $M_1$  of the  $n$  data sets begins at a time  $t_1$ ,

the first data set  $M_1$  comprises all data units of the data stream,

the sending of at least one further data set  $M_k$  ( $2 \leq k \leq n$ )

10 of the  $n$  data sets begins at a time  $t_k$  ( $2 \leq k \leq n$ ),

the at least one further data set  $M_k$  comprises at least one part of the data units of the data stream, and

the  $n$  data sets are sent in such a manner that in the at least one receiving facility  $E_j$ , a reproduction of the data units of the data stream as predetermined time sequence of information, especially picture and/or sound information, can be begun at a starting time  $t_k^A = t_k + \theta$  ( $\theta > 0$ ) and ended at an ending time  $t_k^E = t_k^A + \Delta t$ , where  $\theta$  is a period characteristic of the transmission of individual data units of the data stream from the at least one transmitting facility to the at least one receiving facility  $E_j$  and/or processing of individual data units of the data stream and  $\Delta t$  is a period characteristic of the reproduction of all data units of the data stream as the predetermined time sequence of information,

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wherein the at least one further data set  $M_k$  ( $2 \leq k \leq n$ ) is formed from selected data units of the data stream for which an earlier transmission is begun at least once by the at least one transmitting facility in a time interval between a time  $t_{k-1}$  and the time  $t_k$  ( $2 \leq k \leq n$ ), a time interval ( $t_{k-1}-t_k$ ) being smaller than  $\Delta t$  for at least two of successive times  $t_k$  and  $t_{k+1}$  ( $1 \leq k \leq n$ ).

17. The transmitting device according to claim 16, wherein the transmitting means comprise at least two transmitters for transmitting the data units, the two transmitters being controllable with the aid of the control device in such a manner that a part of the data stream can be sent via one of the at least two transmitters and another part of the data stream can be sent via another one of the at least two transmitters.

18. The transmitting device according to claim 17, wherein the one part of the data stream comprises at least one data unit  $D_b$  ( $b \leq x$ ) of the  $x$  data units  $D_x$  ( $x = 1, 2, 3, \dots$ ) and the other part of the data stream comprises data units  $D_1, \dots, D_{b-1}, D_{b+1}, \dots, D_x$  of the  $x$  data units  $D_x$ .